Magazine

My word

Cynicism and credulity

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We live in irrational times. Astrology and crystal healing have never been stronger. Political argument is gradually eroding, to be replaced by mudslinging and the repetition of half-baked opinion. Recently a sweet-looking old lady sitting next to me in an aircraft told me how glad she was that the experimental medication she was taking hadn't been tested on animals. I didn't point out that if this was true, she had just been made the experimental animal herself (it didn't seem perfectly British and polite). Isn't it a relief to be a scientist, last bastion of truth in a world that has willingly decided it's cool to be gullible?

Recently, though, things have conspired to make me wonder if we're as questioning as we ought to be. Several (maybe even most) fields centre around work that contains obvious errors, but nobody seems to mind because the answers agree with their preconceptions. A brief ask-around in the coffee room reveals that this is nearly universal. Everyone's field depends on inhibitors that aren't specific, or only inhibit a fraction of what they should, assays that will only work under artificial, distorted conditions, or whatever.

The literature, too, is full of howlers. I spotted a particularly good one recently — a much-cited result in which two completely unrelated protein sequences were aligned and said to be homologous (it's amazing what you can do with a sprinkling of gaps and judicious use of bold text). I'm sure you have your own examples.

It's not surprising that this type of error exists or gets published. We're all mortal, and nearly everyone is prepared to tweak their work a bit, if only to show the world how cool it is. The thing that really surprises me is how many bits of dogma are known to be wrong but are still trotted out because they point in the right direction. It's as if science has a split personality. Referees will brutally criticise a conclusion that is probably correct but not proven beyond doubt, while arguments that they know to be wrong are untouched because everyone in the field accepts them. The most rigorous critics of other people's work believe some astonishingly dumb things themselves, and never seem to notice the inconsistency.

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One striking example of credulity is philosophical: the number of practising scientists who believe in a specific, objective 'scientific method'. A generation of historians and philosophers of science have shown that scientists aren't objective or dispassionate, and that the methods of different branches of science have almost nothing in common with one another. Despite this, you can still meet scientists who think they follow some clear but unwritten code that distinguishes the real science they do from the subjective nonsense outside.

A letter in *Nature* a few years back violently criticized anyone who denied that science was objective, on the grounds that it diminished public confidence in science and thus funding levels. But nobody who has gone a few times through the peer review process of the top journals could still believe that publication is underpinned by objectivity. This doesn't mean that science is just the same as astrology, witchcraft or religion, as Paul Feyerabend and followers have suggested. Science works because it tries to test and explain nature, it's just that scientists are as subjective as any other group of humans in deciding what constitutes a test and/or what constitutes an answer.

The opposite of credulity is worse still. There's nothing sadder than a scientist who doesn't believe in anything, whatever the evidence, if they can find a way to rubbish it. They turn up in conferences every now and then — you know, the sad, desiccated-looking people who jump down the throats of speakers whenever they say anything that isn't concretely obvious. Questioning everything all at once doesn't help — you can only test one problem at a time (in my understanding of scientific enquiry, anyway) and disbelieving everything at once doesn't make you more likely to come to any kind of answer.

So, is it really so bad that we're gullible? I don't think so. We're (nearly) all human beings, and the problems that we try to understand are fantastically complex. If they weren't, as my former boss loved to say, someone else would have solved them already. I just wish that supervisors, referees, grant committees and that whole panoply of people who sit in judgement over each other's careers were better at recognising our own weaknesses and admitted to being inconsistent.

In any case, we ought perhaps to get better at forgiving people for saying things that conflict with our own world view. After all, we're probably carrying a stack of wrongful dogmas ourselves. Let he that is without sin cast the first stone.

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